

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SSU-PIN MA
and YEN-SHIH HO

Appeal No. 2005-2286
Application No. 09/821,521

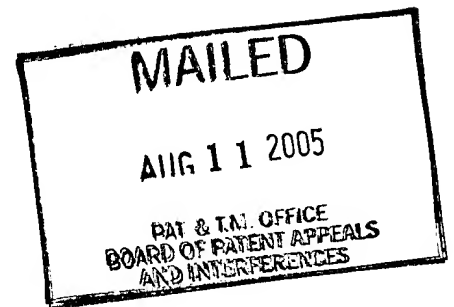
ON BRIEF

Before KRASS, SADDAT and NAPPI, Administrative Patent Judges.
KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 9, and 11-17.

The invention is directed to a planar, spiral inductor structure having a patterned microelectronic structure integral thereto, best illustrated by reference to representative independent claim 9, reproduced as follows:



9. A microelectronic fabrication comprising:
a substrate; and

a spirally patterned conductor layer formed over the substrate, wherein the spirally patterned conductor layer terminates in a microelectronic structure formed within the center of the spirally patterned conductor layer, wherein the spirally patterned conductor layer forms a planar spiral inductor, and wherein the microelectronic structure formed within the center of the spirally patterned conductor layer comprises a series of at least four electrically interconnected sub-patterns.

The examiner relies on the following references:

Shiga	5,396,101	Mar. 07, 1995
Jacobson et al. (Jacobson)	6,294,401	Sep. 25, 2001
		(filed Jun. 17, 1999)
DiCaprio et al. (DiCaprio)	6,452,278	Sep. 17, 2002
		(filed Jun. 30, 2000)

Claims 9, and 11-17 stand rejected under 35 U.S.C. § 103. As evidence of obviousness, the examiner offers Jacobson, coupled with Shiga with regard to claims 9, 11-14, and 16, but coupled with DiCaprio with regard to claims 15 and 17.¹

¹ While neither the final rejection nor the examiner's answer contains any statement of rejection regarding claim 17, apparently the examiner meant to include claim 17, rather than 16, in the rejection under 35 U.S.C. § 103 over Jacobson and DiCaprio. Since appellants apparently are treating claim 17 as being so rejected, and the examiner agrees that the appellants' statement of the issues at page 4 of the brief (see page 2 of the answer) is correct, we will presume that "16" in the second rejection, at page 5, line 5, of the answer, is a typographical
(continued...)

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Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teachings, suggestions or implications in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins &

¹(...continued)
error and the true rejection should read "Claims 15 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Jacobson...in view of DiCaprio..."

Refractories, Inc. , 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1040, 228 USPQ 685, 687 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 146-147 (CCPA 1976). Only those arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR §41.67(c)(1)(vii)].

With regard to independent claims 9 and 16, it is the examiner's position that Figure 4 of Jacobson shows a microelectronic fabrication having a substrate 410, a spirally

patterned conductor layer 426 formed over the substrate wherein the spiral pattern terminates in a microelectronic structure 425 formed within the center of the spirally patterned conductor layer. The examiner contends that Jacobson teaches all of the claimed elements but for the "at least four electrically interconnected sub-patterns to attenuate eddy currents in the microelectronic structure."²

The examiner finds that it would have been obvious to form "three, four, etc., sub patterns since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art" (answer-page 4). Moreover, the examiner cites Shiga, at Figures 2 and 3, for a showing of an inductance element that has a core 14 formed in the center of a substrate, wherein the core comprises a plurality of at least four circuit elements 14a. The examiner asserts that these "elements attenuate eddy currents in the structure and ultimately the operating frequency is elevated (col. 4, lines 27-31) (answer-pages 4-5).

² Claim 9 does not require the added limitation, "to attenuate eddy currents in the microelectronic structure," this limitation appearing only in independent claim 16.

The examiner concludes that it would have been obvious to modify the interconnected sub-patterns of Jacobson by adding more sub-patterns as taught by Shiga "to attenuate eddy currents in a microelectronic device and ultimately increase the operating frequency" (answer-page 5).

For their part, appellants do not dispute the alleged teachings of Jacobson and Shiga, but they do dispute the combinability of these references. In particular, appellants assert that Jacobson's electronic identification tag (Figure 4, and column 7, lines 9-30) is "unlikely to experience eddy currents in its static state since there is no indication that Jacobson's electronic identification tag is powered in its static state" (brief-page 6), and that "Jacobson's electronic identification tag's response is a digital response provided at a resonant frequency and activated by a magnetic field from an external coil controlled by a separate logic circuit..." (brief-page 6). Appellants assert that they are unable to locate anything within Jacobson that would suggest "that eddy currents would actually occur incident to external magnetic field activation of Jacobson's electronic identification tag" (brief-page 6) and that they are unable to ascertain "that additional patterning of Jacobson's pair

of interconnected capacitors to effect eddy current attenuation would facilitate a desired result within Jacobson's electronic identification tag, such as an increased operating frequency, since Jacobson's electronic identification tag operates at a resonant frequency which presumably need not necessarily be (and presumably is not) an increased operating frequency" (brief-pages 6-7).

Therefore, appellants conclude, Jacobson may not properly be combined with Shiga to reject the instant claimed subject matter.

We have carefully considered the evidence before us, including the arguments of appellants and the examiner, and we conclude therefrom that, with regard to independent claims 9 and 16, the examiner has established a prima facie case of obviousness which has not been overcome by appellants through any argument or objective evidence.

We note that with regard to instant claim 9, there is no recitation of eddy currents. The only issue in contention here is the recitation of "at least four electrically interconnected sub-patterns." The examiner has shown that Jacobson shows two such sub-patterns in Figure 4. The examiner then contends, reasonably, in our view, that the number of sub-patterns may be any number

(including 4 or more) desired by a designer and that "mere duplication of the essential working parts of a device involves only routine skill in the art." Appellants have not responded to the examiner's reasonable allegation. Appellants' silence on this point may reasonably be taken as acquiescence. In any event, such lack of argument precludes a showing of any error in the examiner's rationale on appellants' part.

Appellants' argument focuses on the alleged non-combinability of Jacobson and Shiga, but the examiner's rationale anent independent claim 9 may not require combining Shiga with Jacobson, since the examiner has presented reasoning as to why it would have been obvious to increase the number of electrically interconnected sub-patterns from the two shown by Jacobson, Shiga's teachings notwithstanding. Of course, the examiner points to Figure 2 of Shiga, for good measure, to show an actual teaching of using more than four such sub-patterns, merely supplementing what is considered obvious from the teachings of Jacobson alone.

With regard to combinability, we do not find appellants' argument to be persuasive.

Both references deal with microelectronic fabrication. Moreover, the examiner has presented a reasonable rebuttal to appellants' argument of noncombinability in asserting that "[a]lthough Jacobson discloses a spiral inductor not being powered in a static state and operating at a resonant frequency, Jacobson may still benefit from the interconnected subpatterns of Shiga" (answer-page 6).

The examiner explains that at such time as the ID tag in Jacobson is activated by a magnetic field, it may be desirable to elevate the operational frequency of the sub-patterns of Jacobson to a desired resonant frequency. At such time, the teachings of Shiga anent elevating operating frequencies and attenuating eddy currents would be desirable. Jacobson already shows a plurality of electrically interconnected sub-patterns, so Shiga is not necessary for this teaching, especially since the examiner has explained why it would have been obvious to increase the number of electrically interconnected sub-patterns in Jacobson to at least four, even without Shiga's teaching. As the examiner explains, at page 7 of the answer, the plurality of interconnected sub-patterns in Jacobson already "inherently" attenuates eddy currents, Shiga constituting merely a teaching reference that such attenuation of

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eddy currents occur, but Shiga is not used to cure any deficiencies in Jacobson.

Appellants do not respond to these reasonable observations by the examiner. Thus, again, we are deprived of any input by appellants to show any error in the examiner's rationale.

Accordingly, we will sustain the examiner's rejection of claims 9, 11-14, and 16 under 35 U.S.C. § 103.

Turning to the rejection of claims 15 and 17 under 35 U.S.C. § 103, the examiner contends that while Jacobson shows bond pads, the bond wire bonded to the microelectronic structure, as claimed, has not been illustrated. The examiner turns to DiCaprio's Figure 1 for a showing of bond wires 24 connected to bond pads to help minimize the height of the package, referring to column 2, lines 48-50, of DiCaprio.

The examiner recognized that neither reference shows a bond wire with a "plurality of loops," but the examiner asserts that it would have been obvious to form three, four, etc. sub loops in a bond wire "since it has been held that mere duplication of the

essential working parts of a device involves only routine skill in the art" (answer-page 5). The examiner concludes that it would have been obvious to modify the bond pads of Jacobson by attaching low loop bond wires, as taught by DiCaprio, to minimize the height of the package.

Appellants assert that there would have been no reason to modify Jacobson as suggested by the examiner because Jacobson's electronic identification tag is activated by a magnetic field from an external coil and thus requires no apparent bond wire connection. Therefore, argue appellants, any addition of a bond wire would tend to increase, rather than decrease, the height of the package, directly contrary to the examiner's reasoning for making the combination.

With regard to claims 15 and 17, we agree with appellants. Since no bond wire is even shown in Jacobson, and there are various ways to make connections in microelectronic circuits (e.g, magnetic field, connections within the substrate body, etc.), the examiner's allegation that a bond wire "may" be needed (penultimate line at page 7 of the answer) appears speculative, at best. A rejection under 35 U.S.C. § 103 may not be based on speculation. Moreover,

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our review of column 7, lines 18-30, of Jacobson, relied on by the examiner (answer-page 7) for a suggestion of some connection between an inductor coil and a logic module, finds no suggestion of any bond wire.

Accordingly, we will not sustain the rejection of claims 15 and 17 under 35 U.S.C. § 103.


Since we have sustained the rejection of claims 9, 11-14, and 16 under 35 U.S.C. § 103 but we have not sustained the rejection of claims 15 and 17 under 35 U.S.C. § 103, the examiner's decision is affirmed-in-part.

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No time period for taking any subsequent action in connection
with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART


ERROL A. KRASS)
Administrative Patent Judge)


MAHSHID D. SAADAT) BOARD OF PATENT
Administrative Patent Judge) APPEALS
AND
INTERFERENCES)


ROBERT NAPPI)
Administrative Patent Judge)

EAK/dal

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TUNG & ASSOCIATES
838 W. LONG LAKE ROAD
STE. 120
BLOOMFIELD HILLS, MI 48302